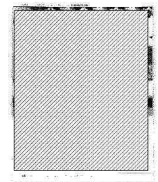


TELEMEDICINE CALLING

Advances in health information technology give
rural Tar Heels access to better care



Relaxing after a long day at a high-stress job in her small mountain town, a 55-year-old woman can't rise from her chair. Her left side feels paralyzed, so her husband rushes her to the local hospital. As he supplies information, a nurse punches vital statistics into a hand-held digital device, which accesses the patient's electronic medical records, including her drug allergies and prescriptions. The nurse transfers the data to a bar-coded plastic bracelet she straps around the patient's wrist, while a doctor phones a stroke specialist at a larger Piedmont hospital. The specialist links his laptop to the medical center's computerized Telestroke system as a team at the community hospital moves a video-conferencing screen to the patient's bedside. The local doctor speaks directly to the specialist, who reviews diagnostic data. They decide to administer intravenously the clot-busting tissue plasminogen Activase — necessary within the critical hours after an ischemic stroke.

After a few days' observation, the hospital releases the patient, who goes home before starting physical therapy. Receiving treatment quickly — without being transported to one of the state's 25 stroke centers — saved her life. And while this particular case is anecdotal, similar scenarios play out every day in the state's 135 hospitals. Telemedicine networks provide advanced health care to patients in rural areas where in-person clinical interactions with doctors are not always possible. The technology enables interactive, real-time patient medical-history reviews, clinical care, physical and psychiatric evaluations, medical diagnoses, occupational therapy and virtual home visits, among other medical services. "All of our patients benefit from [health information technology]-related care," says A.J. Patefield, senior vice president and chief medical information officer at Novant

Medical Group, part of Winston-Salem-based Novant Health Inc., which has 11 hospitals in North Carolina.

The technology is evolving rapidly and includes a mobile robotic unit specialists can remotely maneuver with a joystick to interact with patients across the state or view a physical chart. "Telemedicine enables access and ensures a much better experience for the outpatient," says Stuart James, chief information officer for Greenville-based Vidant Medical Group LLC, whose hospitals connect via telehealth technology with 36 medical practices, a number that will double by September. Vidant's regional system includes 10 hospitals and other health-care services in 29 eastern North Carolina counties. Its flagship, Vidant Medical Center in Greenville, is the teaching hospital for East Carolina University's Brody School of Medicine.

Asheville-based Mission Health System Inc. provides psychiatric and pediatric services remotely at Burke County outpatient clinics. Its telemedicine services also extend to McDowell Hospital in Marion, Transylvania Regional Hospital in Brevard, Blue Ridge Regional Hospital in Spruce Pine and Rutherfordton Memorial Hospital, says Jonathan Bailey, vice president of orthopedics, neurosciences and trauma services at flagship Mission Hospital in Asheville. Angel Medical Center in Franklin and Swain County Hospital in Bryson City soon will be added to Mission's network, which uses technology from Santa Barbara, Calif.-based InTouch Technologies Inc.

In addition to shortening the time from the onset of symptoms to initial treatment, telemedicine reduces patient travel time and eliminates unnecessary transfers to major hospitals, Bailey says. "Patients can now more often stay in their local hospital to receive care, allowing them to be closer to home and to their loved ones. We can pass radio-

logical images between sites, which allows our providers to remotely diagnose conditions [and] reduces the need for patients to be transferred or travel," he says, adding that it also frees up beds for patients who need the higher level of care available at Mission Hospital.

Wake Forest Baptist Medical Center in Winston-Salem also aims to eliminate unneeded patient transport, says neurologist Charles Tegeler, director of telestroke services. "We don't want them to have to come down the mountain just to hear us say, 'No, it wasn't a stroke,' or bear the expenses of having to stay here." The center's Telestroke Network covers 24 counties in western North Carolina and southern Virginia. Wake Forest Baptist has clinics in 18 North Carolina counties.

A diagnostic setup such as Wake Forest Baptist's requires that rural hospitals have high-speed Internet, a mobile video-conferencing system, a 24-hour CT scanner and a teleradiology connection with appropriate software to transmit digital X-rays, scans and sonograms. Also required for stroke cases: 24-hour lab testing and a pharmacy that stocks the clot-busting drug tPA.

Providing health IT to a network of community hospitals runs \$5 million to \$6 million per hospital, and tens of millions for multiple connections, says James. Once the health IT infrastructure is in place, the primary costs are \$10,000 to \$15,000 in monthly connection fees for Internet bandwidth. The broadband connections often are provided by public utilities or cable companies.

The state provides secure broadband connections to universities, their hospitals and other agencies through the North Carolina Research and Education Network, a product of Raleigh-based, not-for-profit Microelectronics Center of North Carolina. In February, Vidant was the first of 24 nonprofit hospitals in

the state to be connected through the Research and Education Network to the North Carolina Telehealth Network, which is binding a rapidly expanding list of hospitals as part of a three-year, \$7.2 million contract with the Microelectronics Center and the N.C. Office of Information Technology Services. It's directed by the Cabarrus Health Alliance and subsidized through the Federal Communication Commission's Rural Health Care Pilot Program.

Despite the upfront investment required, health-care providers see a promising cost-benefit ratio. "Patient-centered quality care is the main benefit telemedicine provides," Bailey says. "I can't emphasize enough how much of a true value telemedicine brings to all participating parties." Mission Hospital provided nearly 150 remote consultations in the 12 months after launching its telehealth service in March 2011.

Insurers also believe in the power of telemedicine. Medicare pays for office visits, consultations and individual psychotherapy or pharmacologic management "via a real-time, interactive telecommunications system at the same amount as when these services are furnished without a telecommunications system," according to Medicare's website. Chapel Hill-based Blue Cross and Blue Shield of North Carolina covers medically necessary telemedicine services. "Blue Cross Blue Shield has been a strong supporter of information technology within its physician practices, including incentives for the use of e-prescribing and electronic medical records," Patefield says.

Other types of health IT include comprehensive electronic health-record systems that help clinicians diagnose patients and prescribe drugs, allow health-care providers to share patient information, give patients online access to their own records and manage billing, payment and insur-

ance transactions. The federal government fostered the growth of health IT through the 2009 Health Information Technology for Economic and Clinical Health Act, which authorized up to \$27 billion in Medicare and Medicaid incentives to clinicians and hospitals that implement health IT. To qualify for financial incentives, health-care providers must show meaningful use of certified electronic health-record technology "with significant advances in health-care processes and outcomes," according to the act.

"The focus in the industry right now is on getting [electronic health records] and other records in as quickly and comprehensively as possible," says James of Vidant Health in Greenville. "We use [health IT] to be sure we are leveraging our technology comprehensively to ensure the best outcomes for our patients, making sure the information always moves faster than the patient does and couple that with robust decision-support tools."

Individual practices also use health IT. Angela McCoy, business systems director of Raleigh-based Eye Care Associates, says practice-management and electronic health-record software programs for optometrists called OfficeMate and ExamWRITER — both from Eyefinity Inc., an affiliate of Rancho Cordova, Calif.-based VSP Global — allow sharing of patient records and test results among the practice's 23 locations in the central Piedmont. "It also means a patient has more access to their records in hopefully an understandable format," she says. "And we can bill claims to our eye-care insurance providers, with documentation scanned to a secure server through a Web-portal clearinghouse, so those with access can obtain insurance information more quickly."

Meanwhile, mobile health IT applications are making it easier to

monitor patients once they leave the hospital. For instance, diabetic patients, according to James of Vidant, are sent home with digital scales and devices to measure their blood sugar and blood pressure. "The patient uses these once a day and the information is sent directly to a nurse at the hospital by cellphone. They don't even need a phone at home. If their weight or blood sugar are up, that's a good indication that they're at increased risk and the nurse can immediately adjust the medications. The patient can be kept at home rather than the hospital."

Health4Me, a free mobile app offered by Greensboro-based UnitedHealthcare of North Carolina Inc. to its employer-plan participants, provides access to a registered nurse and uses GPS to locate a nearby in-network physician, hospital, emergency room or urgent-care center. It also allows patients to check their personal health-benefits information, such as their deductible amounts and account balances. The app can download a health-plan identification card to a smartphone and email or fax it directly to a doctor's office or hospital.

"Health4Me makes navigating health care easier for our 26 million plan participants nationally and puts key information, including health and wellness tools, right in the palms of their hands," says Jeff Alter, UnitedHealthcare's CEO for employer and individual plans.

UnitedHealthcare also is introducing a tool that helps estimate a patient's medical costs. And NowClinic, part of the company's health and wellness package, can immediately access a secure, real-time physicians' network. Consumers can talk to a doctor on their computers through a live, typed chat or face-to-face using webcams. The doctor then can prescribe medications electronically. ■